

LITERATURE REVIEW

Evidence-based Nursing Practice for Health Promotion in Adults With Hypertension: A Literature Review

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Purpose This paper is a report of the results of a literature review conducted with the goal of identifying the nursing process components: assessment, diagnoses, interventions and outcomes related to health promotion in adults with hypertension in primary settings.

Methods A search of MEDLINE, CINAHL, and PantherCat Online Catalogue of UWM database, PsycInfo, Cochrane Database, and Social Services Abstracts was conducted to retrieve literature published from 1988 to 2006.

Results A total of 115 articles were reviewed. Overall, 70 relevant studies were selected on health promotion in adults with hypertension in primary settings. A total of 39 nursing process components (nursing diagnoses outcomes and interventions) related to health promotion with adults with high blood pressure were identified in primary healthcare settings.

Conclusions Research-based evidence material provides an evidence-based nursing practice guideline with specific nursing process components on the topic. The evidence-based nursing practice guideline developed from this referential study for promoting health of adults with hypertension should be reflected in nursing practice in primary healthcare settings. For a future study, focus groups and key informant interview are recommended with nurses who actually provide nursing services in primary healthcare settings to clients who are diagnosed with high blood pressure. [*Asian Nursing Research* 2010;4(4):227–245]

Key Words evidence-based practice, hypertension, literature review

INTRODUCTION

About a decade ago it was estimated that globally 3.45 billion adults (20 years and older) were suffering from high blood pressure (HBP) (Mulrow, 1999). But now HBP affects 600–800 million people worldwide, causes over 7 million premature deaths, takes up 4.5% of the total global disease burden, and accounts for some 64 million disability adjusted life years lost according to the World Health Report

(World Health Organization [WHO], 2005). There are between 50 and 60 million adults with HBP (nearly one in three adults), about 70% of who do not have their HBP controlled (American Heart Association, 2004).

Recent studies recommended lifestyle modifications that decreases blood pressure (BP) levels (Appel et al., 2003; Bacon, Sherwood, Hinderliter, & Blumenthal, 2004; Burke et al., 2005; Cakir & Pinar, 2006; Svetkey et al., 2004). Weight control, exercise, healthy diet,



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limiting alcohol use, and other lifestyle modifications help manage HBP (Center for Disease Control and Prevention, 2006). The latest recommendations for prevention, detection, evaluation, and treatment of HBP have considerably emphasized the individual's health promotion through the healthy modification of their lifestyle (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure [JNC VII], 2003). The control of HBP through health promotion and life style modification presents a significant challenge for a large segment of the population that is well suited to nursing care.

Evidence-based nursing practice (EBN) has been the gold standard for nursing care delivery. It is defined as the integration of the best possible research (Bailey, 2004). EBN relies on not only research evidence but also clinical experience, expert opinion, community standard, published material, valid research evidence, and the patient's values and perspectives (DiCenso, Guyatt, & Ciliska, 2005; Melnyk & Fineout-Overholt, 2005). EBN is believed to contribute significantly to nursing sensitive, effective, high quality health outcomes (Doran, 2003). The application of evidence-based health promotion in dealing with HBP is not only a definitive role for nurses practicing, but is also a major contribution to the science of nursing.

The nursing process has been developed and refined for over four decades. Nurses are effective in managing chronic diseases and promoting health as they use their knowledge and skills to provide care throughout the nursing process. Nursing process is the core and essence of nursing and central to all nursing practice (Yura & Walsh, 1983). It is applicable in any settings including clinical and community settings. In the light of EBN, the nursing process is a universal nursing framework and also a unique way of thinking and acting for clients' care based on references (Wilkinson, 2007).

The importance of the nursing process has been more emphasized, as the trend of electronic health-care records increases to capture nursing practice (Coenen, 2003). Standardized nursing classification systems play a vital role in representing the nursing process. As a result of the efforts of many nurses and

nursing scholars over the decades, the American Nurses Association (ANA) has now acknowledged 12 official standardized nursing vocabularies (ANA, 2009). All of these recognized languages for nursing consist of nursing process components, for example nursing diagnosis, intervention and/or outcome variables. A unified language system, the International Classification for Nursing Practice (ICNP) Programme, was developed by the International Council of Nurses. The ICNP includes these three major nursing process components—Nursing Diagnoses, Outcomes, and Interventions—to help nurses describe, examine, and compare nursing practice in any nursing settings around world (ICNP, 2010). This study aimed to develop an EBN guideline for health promotion in adults with hypertension in primary healthcare settings, by which the three major components of nursing process: diagnoses, interventions and outcomes on the topic were generated from a literature review.

Conceptual definitions

In this section, the variables of interest to the literature review are defined at the conceptual level. These definitions guided the specification of criteria for selecting the studies and facilitated data extraction.

Nursing Assessment is the first phase of the nursing process to collect data about health status and state to monitor for the evidence of health problems and risk factors that may cause health problems (Alfaro-LeFevre, 2002).

Nursing Diagnosis is the analyzing phase of health data and information collected to identify potential or actual health problem and health promotion and strengths, priority areas of practitioner and client health-related concerns (Alfaro-LeFevre, 2002; Martin, 2005).

Nursing Intervention are professional actions or activities implemented by a nurse to address a specific client problem and to improve, maintain, or restore health or prevent illness (Martin, 2005; Martin & Scheet, 1992).

Nursing Outcome refers to the measurements over time of changes effected in nursing diagnosis as a result of nursing interventions (Doran, 2003).

Primary Health Care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community (Declaration of Alma-Ata, 1978).

METHODS

Research design

A literature review was employed to identify the best evidence from the literature on community-based nursing practice related to health promotion for clients with high blood pressure. In the first phase, the most relevant and available sources of the evidence using a systematic approach were collected in order to describe recommended concepts of nursing diagnoses, interventions, and outcomes. These sources were from studies, references, clinical practice guidelines related to health promotion with adults with HBP in primary settings.

The nursing process was used as a framework for this literature review of health promotion of adults with HBP. The Knowledge-based Nursing Initiative (KBNI) was employed to develop an EBN guideline and to identify the nursing process components. Table 1 illustrated the KBNI method for question guiding as a way to identify nursing process components from the literature review. A key feature of the KBNI model is the use of standardized nursing language that includes the ICNP so as to represent these components of the nursing process including nursing diagnoses, interventions and outcomes in a retrievable form in electronic data warehouses. This facilitates the use of these data for nursing research. The data from research and other references were summarized, sorted and grouped by major concepts: nursing diagnoses with assessment factors and related outcomes, and nursing interventions based on the method of the KBNI question guides (Table 1).

Data extraction/sample

Data were collected from the referential literature. The search focused on nursing interventions for health promotion in adults with HBP. The focus

was on primary health care of adults with HBP in community settings. Systematic exploration of the available data included the opinion of respected authorities at national and international levels, the reports of expert committees, including other published materials. Evidences were drawn from a systematic exploration of the available relevant published information. The information included descriptive and qualitative studies, literature reviews of such studies, case control, cohort studies, evidences from other systematic reviews, randomized control trials (RCTs), and meta-analysis of relevant RCTs.

Systematic reviews use scientific methods to summarize the results from multiple research studies (DiCenso et al., 2005). The process of identifying and selecting sources for the literature review was extensive so as to obtain the best possible evidence to describe the nursing phenomena related to health promotion with HBP in adults including the nursing process elements: nursing diagnoses, interventions and outcomes.

Inclusion and exclusion criteria

These electronic databases were searched in English and Korean languages for references and articles in dealing with adult populations aged over 18 years old. The search period was limited to be between 1988 through 2006, specifying the use of development of the elements of nursing process on health promotion in with HBP in community settings. Exclusion criteria were established and the search did not include prevention, dental journal groups, secondary high blood pressure, or pharmaceutical interventions.

The key terms were selected after meetings with three experts on EBN and meta-analysis. The following PubMed MeSH, words, and phrases were used to search for and identify as many articles as possible related to health promotion in adults with HBP in primary healthcare settings:

- Health promotion/health promoting behavior/health seeking behavior intervention studies
- Life style and modifications/behavior modifications

Table 1*Knowledge-based Nursing Initiative (KBNI) Method for Question Guiding the Literature Review*

Column heading	Review directions
Citation	The entire library of citations from an EndNote file can be loaded into the Evidence Table template, or individual citations may be copied and pasted from the file.
Question/topic, sample, setting	Guiding questions: <ul style="list-style-type: none"> • For research citations, state study aim or purpose • For nonresearch citations, identify main topic/subject • For tools: Identify name of instrument/tool analyzed Sample: Briefly describe sample characteristics Setting: Note setting (e.g., hospital, community)
Type of evidence	Indicate type of report (e.g., meta-analysis, descriptive study) using standardized list under “type of evidence” tab. After the first time a word is typed in, Excel auto completes that word after one or two letters are typed.
Findings related to patient assessment	Briefly describe findings related to patient assessment, considering the following questions: <ul style="list-style-type: none"> • What are the general assessment items related to this phenomenon? • Which should be addressed for all patients? • Which indicate need for focused assessment? • What are the focused assessment items? • For all of these items, what evidence supports frequency of assessment/reassessment?
Findings related to problem identification/diagnosis	Briefly describe findings related to problem identification, considering the following questions: <ul style="list-style-type: none"> • What assessment factors, constellation of factors, or “cut-off point” led to identification of problem? (e.g., Braden score of 16–18 identified patient as mild risk for pressure ulcers) • What term or nursing diagnosis did author use to describe conclusion of assessment? (e.g., “mild risk for pressure ulcer”)
Findings related to interventions	Briefly describe findings related to nursing interventions, considering the following questions: <ul style="list-style-type: none"> • What interventions were tested in study? • For review articles or expert opinion, describe interventions recommended. • For all, describe protocol or intervention(s) in detail • How were interventions targeted for particular assessment factors?
Findings related to sensitive outcomes	Briefly describe findings related to nurse-sensitive outcomes, considering the following question: <ul style="list-style-type: none"> • What were the patient-relevant outcomes measured? Describe effect of intervention on outcome (positive and negative). Include description of metrics if described.
Findings related to background, significance of problem	Briefly describe findings related to background and significance of the problem. Include an entry for any evidence used to support statements in Phenomenon of concern document (e.g., incidence of problem, significance if undetected, impact of outcomes)

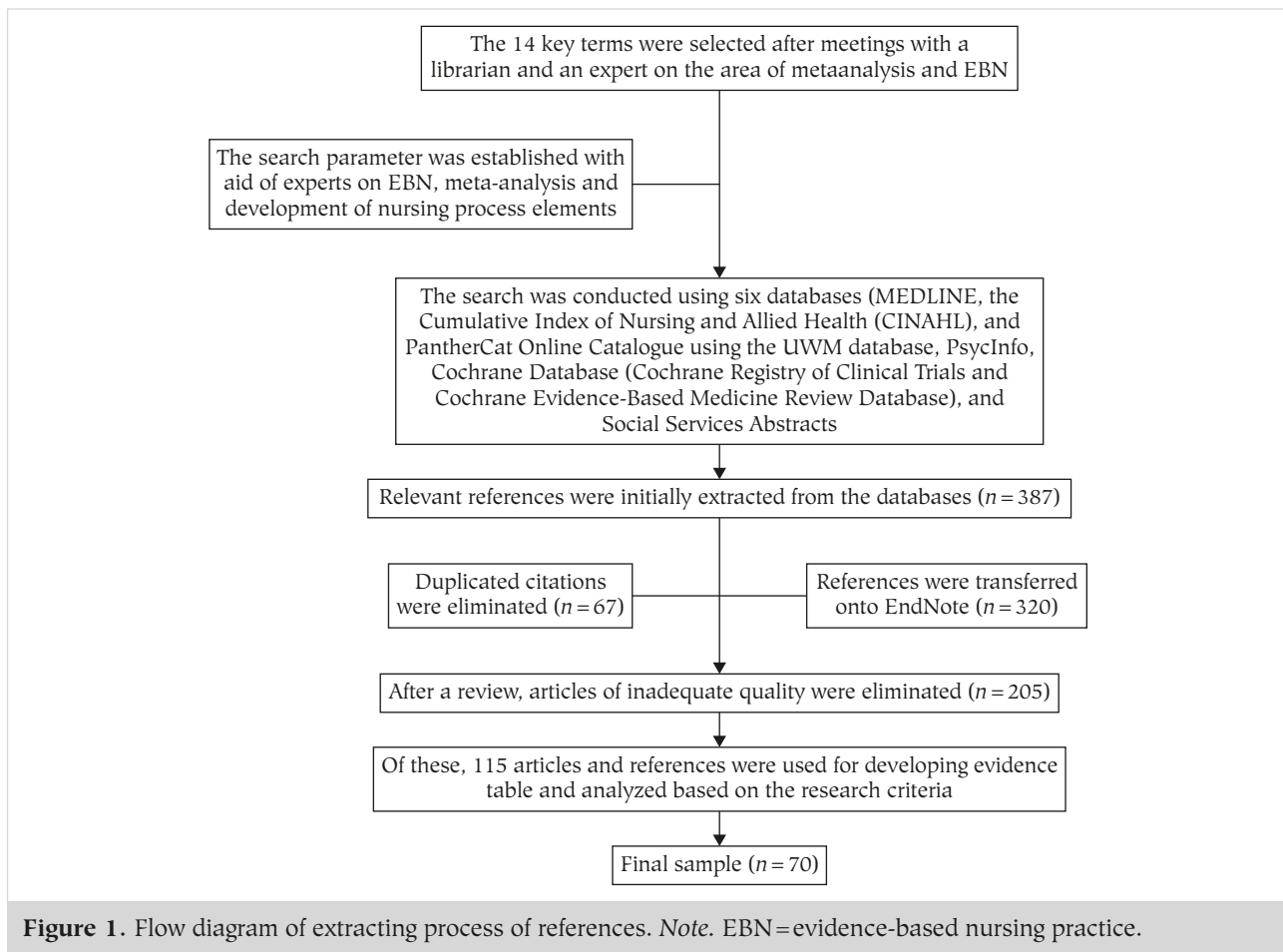
- Hypertension/high blood pressure
- Abnormal blood pressure/high blood pressure
- Blood pressure monitoring
- Level of exercise/physical activity
- Sleep and rest patterns
- Alcohol/drinking
- Smoking
- Patterns of alcohol and tobacco use cholesterol levels
- Weight change/obesity
- Diet/nutrition
- Interventions to reduce psychosocial stressors
- Interventions that promote adherence to therapy/medication regimen

Search strategies

The search included the following databases: MEDLINE, the Cumulative Index of Nursing and

Allied Health (CINAHL), and PantherCat Online Catalogue using the UWM database, PsycInfo, Cochrane Registry of Clinical Trials and Cochrane Evidence-Based Medicine Review Database, and Social Services Abstracts. Additionally, websites such as the National Guideline Clearinghouse and other heart and high blood pressure sites (both government and nongovernment sponsored), online reports, publications, conference proceedings from national and international agencies were also used.

Figure 1 is a flow diagram that explains how to select references regarding the number of studies included according to the search parameter with nursing process elements. The components of nursing process focusing on health promotion with adults with HBP in primary healthcare settings were collected from references and research from 1988 through 2006. A search parameter was to use



fourteen key terms related to the topic of health promotion in adults with HBP in primary settings with six databases used. The search parameter was established and the search was conducted with the aid of two experts in the area of EBN and library information studies. A total of 320 articles were identified and reviewed based on study parameters; of these, 115 studies were selected for analysis based on the research criteria. Although several electronic databases were searched in English and Korean languages, no Korean articles were extracted on the topic.

Data analysis

Analysis using publication dates revealed that there was a gradual change in the annual frequency of health promotion studies published on this area of topic from 1988 through 2001, and a notable increase in the number of research articles published between 2002 and 2003 (9.6% increase). This review method followed a systematic search informed by Sigma Theta Tau International Honor Society of Nursing (DiCenso et al., 2005) and also drew on the design of the KBNI Method (Hook, Burke, & Murphy, 2009; Lang et al., 2006). The review of the literature was utilized to obtain the best possible evidence from referential knowledge in terms of nursing process components focusing on health promotion in adults with HBP.

The following information was gathered about each study: Year of publication, country in which the study was conducted, study designs, number and type of study groups (control or comparison and treatment or two treatment groups), research population, settings, research objectives, nursing diagnoses with assessment factors, intervention activities, outcome variables, and each methodology of the study included. These factors were added into the evidence table using Excel Program (Microsoft Corp., Redmond, WA, USA). The researcher also gave attention to several other factors during the process of the literature review: (a) the extent to which overall findings were similar from study to study (or the degree of results of similarity among studies); (b) what practical, clinically important recommendations

were made by studies; (c) how the findings of the study might be applied to health promotion services for particular groups or populations; (d) what research settings were used; and (e) the data from references. The researcher evaluated the evidence that had been collected for validity, relevance, and applicability in community settings focusing on health promotion with HBP prior to synthesizing the best possible evidence recommended.

As can be seen from the question guiding method in the Table 1, to develop an EBN guideline for health promotion for adults with HBP generates numerous questions. The randomized clinical trials is the most appropriate research design to address this type of questions, and only a few of which are best addressed with an RCT design for evaluating the effectiveness of nursing interventions on the characteristics of topics. Different study designs facilitated to address other questions of importance to nursing process components. For example, observation studies may use for questions of nursing diagnoses/outcomes, whereas qualitative designs are best to understand patients' experiences, attitudes and preferences. However, scientifically sound systematic reviews of literature.

A total of 115 references and articles were identified and reviewed based on research criteria on this topic. An evidence table was developed from these referential materials. To describe patient assessments, problem identifications, nursing interventions, and outcomes, the data from the reference materials were analyzed. Of these, 70 studies on health promotion in adults with HBP in primary settings were selected for analysis based on the research criteria. The researcher used rating systems for the hierarchy of evidence that specified twenty five types of references and sorted eight levels of evidences including: meta-analysis, randomized controlled trial, nonrandomized controlled trial, cross-sectional study, case control study, pre-post no control group study, time series study, noncomparative study, retrospective cohort study, prospective cohort study, descriptive study, co-relational study, psychometric study, systematic literature review, narrative literature review, case series study, consensus report, published guidelines, focus

group research, delphi survey research, grounded theory research, phenomenologic research, other qualitative research, and other. To describe nursing diagnoses with patient assessments, problem identifications, nursing interventions, and outcomes, the qualitative data were analyzed through qualitative narrative syntheses from the evidence table using Excel software by the researcher.

RESULTS

In this study, nursing diagnoses, and outcomes, with assessment factors and interventions for adults with HBP, were identified from references resources. The researcher paid special attention to the practical, clinically-important recommendations made by studies and how to apply the results to health promotion care in adults with HBP in community settings, on the basis of the consistency of the primary objective of the research questions and research findings. Nursing interventions were classified on the basis of the principles of services of health promotion identified in Lundeen's CCPHC model (Hong, 2007).

The sample of 70 articles and references resulted in the identification of a total of 39 nursing process components including nursing assessments, diagnoses, interventions and outcomes. Nursing components identified were: (a) Nursing Assessment Factors: Systolic and diastolic blood pressure at each encounter; demographic characteristics; diseases conditions associated with higher vascular risk conditions; physical examination for new patients with HBP; major risk factors for cardio-vascular disease; monitor lab tests; physical activity status; dietary status; alcohol consumption; weight reduction; barriers to HBP control; medication adherence (Table 2). (b) Nursing Diagnosis Factors: HBP; Overweight with HBP; Obesity with HBP; High Risk for Obesity; Excess Alcohol Consumption with HBP; Lack of Exercise/Physical Inactivity; Less Physical Activity than Recommended; Smoking with HBP; Adherence to Medication Regimen; and Persistent HBP. (c) Nursing Outcome Factors: Attained Target BP; Maintained Target BP; Decreased BP/Lowered BP;

Increased Physical Activity; Increased Fruits and Vegetable Intake; Low-Fat Dairy Product Consumption; Salt-Restricted Diet; Reduction of Alcohol Consumption; Normal Body Weight; and Weight Loss (Table 3). (d) Nursing intervention Factors were categorized in 11 areas based on the principle services such as Health teaching, Counseling, Lifestyle modification, Nursing case management, Surveillance identified in Lundeen's CCPHC Model. Nursing interventions for hypertensive patients focusing on health promotion nursing activities are identified as follows: Identify Demographic Characteristics; Perform Physical Examination; Measure BP; Monitor BP; Monitor Lab Tests; Review Patient BP Record; Identify Barriers to Control BP; Calculate BMI; Provide Health Teaching about Behavioral Lifestyle Modification Therapy; Provide Counseling; and Facilitate Case Management (Table 4).

This study summarized evidence from study recommendations to develop nursing process factors related to the promotion of health in a primary setting for hypertensive adults. The causes of HBP vary, but the cause has yet to be determined; most of the time, the attack is sudden and silent (National Heart Lung and Blood Institute, 2006). It is imperative to identify as many items as possible that are relevant to the particular topic to support nursing process components for evidence-based nursing practice to promote health for adults with HBP in community settings.

DISCUSSION

For developing of EBN guideline for health promotion of adults with HBP in primary healthcare settings, a total of thirty nursing process components were identified from a systematic literature review of 70 articles and references. On the basis of the consistency of the primary objective of the research questions and research findings, the researcher paid special attention to the practical, clinically important recommendations made by these studies and how the results can be applied to health promotion care in adults with HBP in community settings. Since there

Table 2

Nursing Assessment Recommendations Identified From Literature Review Related to Health Promotion in Adults With High Blood Pressure in Primary Healthcare Settings

Nursing assessments	Factors	Contents	Sources
Assess systolic and diastolic BP at each encounter (e.g., primary care settings)	SBP: ≤ 140 mmHg or DBP: ≤ 90 mmHg or Use of antihypertensive medication	Measuring BP after a 5 min. rest period; 2 BPs were measured 5 min apart.	Artinian, Washington, & Templin (2001) Schneider et al. (2005) Oncken et al. (2001) Stewart et al. (2005) Yosefy et al. (2003)
Assess demographic characteristics	Age Gender Ethnicity Education level Family history	The prevalence of HBP is predicted on the racial composition, and demographic characteristics.	American Heart Association (2004) Eaton, Buck, & Catanzaro (1996) McCraty, Atkinson, & Tomasino (2003) Wolz et al. (2000)
Assess disease conditions associated with higher vascular risk conditions	Diabetes mellitus Renal insufficiency Poststroke patient Postmyocardial infarction patient	Untreated high blood pressure can damage organs, such as heart, brain, kidneys, or eyes.	JNC VII (2003) Grundy et al. (1998)
Physical exam assessment for new patients with HBP	Inspection Percussion Palpation Auscultation	The goal of treatment of HBP is to prevent the long term sequelae of target organ damages.	Freitag & Vasan (2003) Roberts & Banning (1998) Smith, Merritt, & Patel (1997) WHO/ISH (2003)
Assess major risk factors for cardiovascular disease	Diabetes mellitus Smoking Dyslipidemia Urinalysis including	Cardiac risk factors related to HBP are diabetes mellitus, smoking, hypercholesterolemia	Williams et al. (2004) JNC VII (2003) Freitag & Vasan (2003) Raw, McNeill, & West (1998)
Monitor the most recent values for lab tests	ECG Urinary albumin excretion Serum test Sodium Potassium Calcium Uric acid Blood lipids Hematology Blood glucose	Routine monitor must include ECG, glucose, electrolytes and a urinalysis.	Roberts & Banning (1998) Williams et al. (2004)

Assess physical activity status to find cases of physical inactivity or less than recommended	Frequency: on most, preferably all days of the week. Intensity: moderate-intensity (40–60% of VO_2R) Time: ≥ 30 min of continuous activity Type: primarily endurance physical activity supplemented by resistance exercise	Being physically active is one of the critical factors to prevent or control HBP as well as to reduce cardiovascular disease	Pescatello et al. (2004) Stewart et al. (2005)
Assess dietary status	Low cholesterol diet Low fat dairy products Diet rich in fruits, vegetables Daily restricted salt intake Men: ≤ 2 alcohol drinks per day Women and lighter-weight person: ≤ 1 drink per day	To lower blood pressure, combining low-fat dairy products and reduction of salt intake and total fat affects BP to fall. Reducing alcohol consumption is associated with a lowering of BP	Ajani, Dunbar, Ford, Mokdad, & Mensah (2005) Lancaster (2004) WHO (2002) Beyer (2004)
Assess weight reduction	Calculating patient's BMI Screen obesity	Obesity is a major risk factor for coronary heart disease and diabetes related to HBP.	Armitage (2003) Becker et al. (2004) Beyer (2004)
Assess barriers to HBP control	Financial barriers Cultural barriers Level of education Health belief Health priorities Illiteracy Language barrier	Identifying barrier factors constitutes a major advance for developing strategies for detecting, preventing, controlling HBP.	Armitage (2003) Becker et al. (2004) Aranda & Vazquez (2004) Burke et al. (2002) Jonnalagadda & Diwan (2005) Fouad et al. (1997) Lang (2000)
Assess medication adherence	Taking medication adherence Correct dosing	It is estimated that at least 50% of patients with HBP do not take their antihypertensive medication as prescribed.	Fernandes (1999) Hamilton (2003) Hill & Berk (1995) Schneider et al. (2005) Saounatsou et al. (2001)

Note. SBP = Systolic blood pressure; DBP = diastolic blood pressure; ECG = electroencephalogram; VO_2R = oxygen uptake reserve.

Table 3

Nursing Diagnoses and Outcomes Identified From Literature Review of Literature Related to Health Promotion in Adults With High Blood Pressure in Primary Healthcare Settings

Nursing process	Variables	Assessment factors	Sources
Nursing diagnoses	HBP	SBP: ≥ 140 mmHg or DBP: ≥ 90 mmHg or Use of antihypertensive medication	Chobanian et al. (2003) Wolf-Maier et al. (2004) WHO/ISH (2003) Williams et al. (2004) Heiberg (2000) JNC VII (2003)
	Overweight with HBP	BMI 25–29.9 kg/m ²	
	Obesity with HBP	BMI ≥ 30 kg/m ²	
	High risk for obesity	Men: WC > 120 cm (40 inches) Women: WC > 88 cm (35 inches).	
	Excess alcohol	Men: > 2 alcohol drinks per day	Jamnik et al. (2005)
	Consumption with HBP	Women: > 1 drink per day	Williams et al. (2004)
	Lack of exercise/physical inactivity or Less than recommended	Frequency Intensity Time Type	Li, Fisher, & Harmer (2005) Lee, Lim, & Lee (2004) Whelton, Chin, Xin, & He (2002)
	Smoking with HBP	No. of cigarettes per day	Moher, Hey, & Lancaster (2005) Jamnik et al. (2005) Yosefy et al. (2003) Schroeder, Fahey, & Ebrahim (2006)
	Nonadherence to medication Regimen: I: Total II: Partial III: None, or Erratic Adherence	Taking medication adherence: the percentage of prescribed doses was taken, and is calculated as: Total no. of recorded medication events/total no. of prescribed doses) $\times 100\%$ Correct dosing adherence: percentage of days on which the correct no. of doses was taken, and is calculated as (total no. of days with recorded medication events as prescribed/total no. of monitored days) $\times 100\%$	
	Persistent HBP	Not achieving target BP after adhering to full doses of an appropriate 3-drug regimen that includes a diuretic	O'Rourke & Richardson (2001) JNC VII (2003) American Diabetes Association (2004) Eaton et al. (1996)
Nursing outcomes	Attained target BP	Target BP goal: $< 140/90$ mmHg	
	Maintained target BP	Goal for patient with diabetes: $\leq 130/80$ mmHg BP: Below 130 mmHg (SBP) and below 85 mmHg DBP	

Decreased BP/lowered BP	Not achieved target BP yet, lower BP than the previous one	Dickinson et al. (2006) Liehr et al. (2006) WHO/ISH (2003) Pheley et al. (1995) Writing Group of the PRIMIER Collaborative Research Group (2003) Stewart et al. (2005)
Increased physical activity	25/30–45 min of aerobic exercise on most days (at least 3–5 d) of week	Lancaster (2004) Writing Group of the PRIMIER Collaborative Research Group (2003)
Increased fruits and vegetable intake	Consumption of at least 2–5 portions per day	Touyz et al. (2004) Woollard et al. (1995) JNC VII (2003)
Salt-restricted diet	≤ 100 mmol of sodium per day (2.4 g sodium or 6 g NaCl)	Puddey & Beilin (2006) United State Department of Health and Human Services (2003) Jamnik et al. (2005) Staessen, Fagard, & Amery (1988) Yeh, Lu, & Wang (2002) Mulrow et al. (2006) Writing Group of the PRIMIER Collaborative Research Group (2003)
Reduction of alcohol consumption	Alcohol intake: < 10 g/day	
Maintaining normal body weight	Men: WC: < 102 cm Women: WC < 88 cm BMI: 18.5–24.9 kg/m ² Less than the previous weight but normal weight	

Note. HBP = high blood pressure; BMI = body mass index; WC = waist circumference.

Table 4

Nursing Interventions Identified From Integrative Literature Review Related to Health Promotion in Adults With High Blood Pressure in Primary Healthcare Settings

Interventions	Contents	Activity pursuit	Sources
Measuring BP at each visit	In-office measurement: at each encounter in primary settings Standardization of methods of BP measurement	After 5 min of sitting rest, two or three measurements with a 5-min interval between readings. If more than 5 mmHg BP differences, additional readings required. • Mercury sphygmomanometer	Ebrahim (1998) Pheley et al. (1995)
Monitoring BP after obtaining the target BP (140/90 mmHg)	After obtaining target BP	Every 3–6 mo after the target BP attained, visits should be scheduled for the same time of day and at least a day after an exercise workout.	American Diabetes Association (2004) Davidhizar & Shearer (2004) Graham, Sketris, Burge, & Edwards (2006)
Reviewing patient BP self-check record at home	Patient BP self-check record at home	Using standardized device for BP self-measurement. The 24-hr BP monitoring provides various information about BP during activities and rest	Chodosh et al. (2005) Fahey, Schroeder, & Ebrahim (2006) McTigue et al. (2003) Artinian et al. (2001) Aranda & Vazquez (2004) Burke et al. (2002) Jonnalagadda & Diwan (2005) Fouad et al. (1997) Lang (2000)
Identifying barriers to control BP	Financial barriers Cultural barriers Level of education (e.g., low literacy) Health belief Health priorities Illiteracy Language barrier	Communication barriers, cultural differences, low educational level, and lack of health insurance, lack of understanding health information are major barriers to awareness and control of HBP and decrease adherence.	
Calculating BMI	Calculating patient's BMI	Method: BMI is weight divided by height (kg/m ²)	U.S. Department of Health and Human Services (2003)
Health teaching about behavioral lifestyle modification therapy	Physical activity	Frequency: most days of the week. Intensity: moderate-intensity (40–60% of VO ₂ R). Time: ≥ 30 min of continuous or accumulated physical activity per day Type: primarily endurance physical activity For obesity: bimonthly reinforced visits for diet management of low calories intake (1,000–1,200 kcal for women and 1,200–1,500 kcal for men)	Stewart et al. (2005) Schuster-Decker, Foster, Porcari, & Maher (2002) Whelton, Chin, Xin, & He (2002)
	Weight loss: Goal: an ideal body weight (BMI = 18.5–24.9 kg/m ²) multidisciplinary approach		Heiberg (2000) Mulrow et al. (2006) Padwal, Campbell, & Touyz (2005) Staessen et al. (1988)

Health teaching about behavioral lifestyle modification therapy	Moderate alcohol consumption	≤ 2 drinks per day Men: ≤ 14 standard drinks per week Women: ≤ 9 standard drinks per week (A standard drink: beverage containing 13.6 g of pure alcohol)	Touyz et al. (2004) Williams et al. (2004)
	Restricted sodium intake	≤ 100 mmol/d; sodium intake of 2,400 mg of sodium/d (i.e., salt intake < 6 g/d) to achieve target BP and maintain normal BP.	Ebrahim (1998) Woollard et al. (1995)
	Smoking cessation	For smokers with HBP, individual and group smoking sessions.	Moher et al. (2005) Raw et al. (1998)
	Dietary approaches to stop hypertension (DASH) diet	Reduced fat, red meat, sweets and sugar-containing beverages. Low cholesterol diet: • Fruits, vegetables (about 10 servings/d) • Low fat dairy products (2 servings/d) • Low cholesterol (< 300 g/d)	Oncken et al. (2001) Rankins, Sampson, Brown, & Jenkins-Salley, (2005) Vollmer et al. (2001)
Counseling	Face to face	Counseling is to support intervention and follow-ups after completion of educational intervention.	Bosworth et al. (2005)
	Telephone counseling	Based on each individual's demographic characteristics, nurses provide counseling sessions. Meditation/relaxation/biofeedback	McTigue et al. (2003) Woollard et al. (1995)
Case management	Stress management technique	Progressive muscle relaxation	Yug, Kochar, & Kotecki (1996)
	Accelerated HBP with retinopathy	Referral due to therapeutic problems or special situations.	Krieger, Collier, Song, & Martin (1999)
	Several HBP (> 220/120 mmHg)		O'Rourke & Richardson (2001)
	Young age (< 20 yr)		Williams et al. (2004).
	HBP in pregnancy		
	Multiple drug intolerance		
	Multiple drug contraindications		
	Persistent nonadherence		
	Sudden worsening of HBP		

Note. BP = blood pressure; BMI = body mass index; VO₂R = oxygen uptake reserve.

was an overlap between the nursing diagnoses and outcomes identified from the literature reviewed, the researcher viewed the nursing diagnoses and outcomes in a continuum process. Nursing outcome is influenced by nursing interventions which is provided on the basis of primary captured indicators. It is important to note that these nursing interventions can be a basis of another nursing diagnosis in the other way round towards promoting health in nursing outcomes.

Accordingly, nursing diagnoses/outcomes were categorized in seven health promotion areas from the JNC VII (2003): (a) BP Control: HBP, persistent HBP, attained target BP, maintained target BP, and decreased BP/lowered BP; (b) Weight Control: overweight with HBP, obese with HBP, normal body weight, weight loss, and high risk for obesity; (c) Alcohol Consumption: excess alcohol consumption with HBP, and reduction of alcohol consumption; (d) Physical Activity: lack of exercise/ physical inactivity, less than recommended, and increased physical activity; (e) Smoking Consumption: smoking with HBP, and smoking cessation; (f) Adherence Medication Regimen: total adherence medication regimen, partial adherence medication regimen, and none/erratic adherence medication regimen; and (g) Diet with HBP: excess salt consumption, increased fruit and vegetable intake, low-fat dairy product consumption, salt restricted diet. Non-pharmacologic interventions are safe, inexpensive and when combined with medication therapy, may result in better HBP control and an improved quality of life (Burke et al., 2005). Even a small reduction of BP can have enormous advantages on cardiovascular diseases (Rogers et al., 2001; Stamler, Stamler, & Neaton, 1993). This review examined the effects of various nonpharmacological interventions such as salt restriction, weight loss, stress control, exercise, and alcohol reduction. These interventions are important in educating clients to lower their BPs and to reduce the incidence of HBP.

The findings of this study provide valuable insight into the nature of nursing diagnoses, interventions, and outcomes focusing on health promotion with HBP for the use of foundation of electronic

record. Following nursing diagnoses including Nutrition, Physical activity, Health care supervision, and Medication regimen and all key elements of health promotion practice were identified in the literature review. Findings from this study suggest that nursing diagnoses identified from the research-based approaches were consistent with the Joint National Committee on Prevention, Detection, Evaluation and Treatment of HBP and WHO/International Society of Hypertension (ISH) (JNC VII, 2003; WHO/ISH, 2003). These guidelines recommend health care supervision for clinician awareness and monitoring, communication with community resources to schedule for regular follow-ups and health care support, control of substance use, such as alcohol and smoking, and individualized dietary regimen including salt, fat, fruit and vegetable intakes, as well as medication regime to manage HBP. Although an increasing numbers of clinical and organizational activities are carried out by nurses, there is insufficient evidence about the nurses' roles in previous primary care and their impact on patient health outcomes. The findings of the nursing process components identified in this study may be a source to develop updated nursing process components related to health promotion practice even which the population is already diagnosed with chronic diseases such as hypertension, and expand nursing knowledge in primary health care settings.

Limitations

Searching is a critical part of conducting this kind of review; however, the search process may result in biased or incomplete evidence summaries from the review. In most studies, direct comparisons of interventions to usual care or another intervention were confounded because of the heterogeneity among studies in terms of designs, interventions, methods used to measure, and analyses of outcomes (e.g., measuring adherence in different ways for instance, self-report, direct questioning, pill counts, and the medication event monitoring system), and variety in the duration of follow-up (from 2 weeks to 60 months). It was frequently difficult to pool the concurred recommendations and to integrate representations of outcomes by types of interventions grouped. A few

examples of methodological issues of the studies included few trials successfully controlled potential confounding factors between study groups, few trials described the methods of randomization or allocation processes, none of RCTs blinded either experimental group participants or the providers to diet interventions; the various number of participants and dropouts rates. The issue of subjectivity was involved with the synthesis process of the studies and the limitations of study methodological quality. These findings highlight the need for improved research designs in nursing research.

CONCLUSIONS

In this study, lifestyle modifications were especially addressed including weight control, limitation of alcohol consumption, increased physical activity, increased fruit and vegetable consumption, reduced total fat and saturated fat intake, and cessation of smoking. According to current national recommendations for prevention, detection, and treatment of HBP (JNC VII, 2003), people who are diagnosed with HBP or those who are at a high risk of HBP in the pre-hypertension category (SBP: 120–139 mmHg or DBP: 80–89 mmHg) are strongly advised to make lifestyle modifications for promoting their health, so that these individuals reduce HBP. The research has provided strong evidence that a variety of lifestyle modification interventions affect lower BP and to reduce the incidence of HBP.

It is important for nurses to be prepared with clinical competencies related to health promoting services in their own practice. Research-based evidence material provides in depth information with specific assessment factors and rationales. Health promotion interventions should be extended to non-hypertensive individuals. Key recommendations from the evidence drawn from this referential study and developing guideline for promoting health in adult clients with HBP should be reflected in nursing practice and in the education of nursing students. This study supports nurses to use knowledge from the study as evidence-based practice to fit with the

nursing process. As EBN relies not only on valid research evidence materials, but also on clinical experience, and experts' opinions (DiCenso et al., 2005; Malloch & Porter-O'Grady, 2006), for a future study, focus groups and key informant interview are recommended with nurses who actually provide nursing services in primary healthcare settings to clients who are diagnosed with HBP.

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REFERENCES

- Ajani, U. A., Dunbar, S. B., Ford, E. S., Mokdad, A. H., & Mensah, G. A. (2005). Sodium intake among people with normal and high blood pressure. *American Journal of Preventive Medicine*, 29(5), 63–67.
- Alfaro-Lefevre, R. (2002). *Applying nursing process: Promoting collaborating care* (5th ed.). Philadelphia: Lippincott, Williams & Wilkins.
- American Diabetes Association. (2004). Hypertension management in adults with diabetes. *Diabetes Care*, 27, S65–76.
- American Heart Association. (2004). *Heart disease and stroke statistics: 2004 update*. Retrieved May 21, 2007, from <http://www.americanheart.org>
- American Nurses Association. (2009). *Recognized languages for nursing*. Retrieved December 10, 2009, from <http://nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/NursingStandards/DocumentationInformatics/NIDSEC/Recognized-Languagesforursing.aspx>
- Appel, L. J., Champagne, C. M., Harsha, D. W., Cooper, L. S., Obarzanek, E., & Elmer, P. J. (2003). Effects of comprehensive lifestyle modification on blood pressure

- control: Main results of the PREMIER clinical trial. *Journal of the American Medical Association*, 289, 2083–2093.
- Aranda, J. M., & Vazquez, R. (2004). Awareness of hypertension and diabetes in the Hispanic community. *Clinical Cornerstone*, 6(3), 1–11.
- Armitage, A. (2003). Motivating overweight adults to lose weight. *Clinical Excellence for Nurse Practitioners*, 7(4), 92–98.
- Artinian, N. T., Washington, O. M., & Templin, T. N. (2001). Effects of home telemonitoring and community-based monitoring on blood pressure control in urban African Americans: A pilot study. *Heart & Lung*, 30, 191–199.
- Bacon, S. L., Sherwood, A., Hinderliter, A., & Blumenthal, J. A. (2004). Effects of exercise, diet and weight loss on high blood pressure. *Sports Medicine*, 34, 307–316.
- Bailey, S. (2004). Nursing knowledge in integrated care. *Nursing Standard*, 18(44), 38–41.
- Becker, H., Bester, M., Reyneke, N., Labadarios, D., Monyeki, K. D., & Steyn, N. P. (2004). Nutrition related knowledge and practices of hypertensive adults attending hypertensive clinics at day hospitals in the Cape. *South African Journal of Nursing*, 27(2), 63–69.
- Beyer, S. (2004). Cardiovascular disease in alcohol abusers. *Journal of Addictions Nursing*, 15(2), 75–79.
- Bosworth, H. B., Olsen, M. K., Gentry, P., Orr, M., Dudley, T., & McCant, F. (2005). Nurse administered telephone intervention for blood pressure control: A patient-tailored multifactorial intervention. *Patient Education & Counseling*, 57, 5–14.
- Burke, V., Beilin, L. J., Cutt, H. E., Mansour, J., Wilson, A., & Mori, T. A. (2005). Effects of a lifestyle programme on ambulatory blood pressure and drug dosage in treated hypertensive patients: A randomized controlled trial. *Journal of Hypertension*, 23, 1241–1249.
- Burke, V., Mori, T. A., Giangiulio, N., Gillam, H. F., Beilin, L. J., & Houghton, S. (2002). An innovative program for changing health behaviours. *Asia Pacific Journal of Clinical Nutrition*, 11, S586–S597.
- Cakir, H., & Pinar, R. (2006). Randomized controlled trial on lifestyle modification in hypertensive patients including commentary by: Clark AM and response by Pinar and Cakir. *Western Journal of Nursing Research*, 28, 190–215.
- Center for Disease Control and Prevention. (2006). *Preventing and controlling high blood pressure*. Retrieved October 23, 2005, from <http://www.cdc.gov/blood-pressure/prevention.htm>
- Chobanian, A. V., Bakris, G. L., Black, H. R., Cushman, W. C., Green, L. A., & Izzo, J. L. (2003). Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension*, 42, 1206–1252.
- Chodosh, J., Morton, S. C., Mojica, W., Maglione, M., Suttorp, M. J., & Hilton, L. (2005). Improving patient care. Meta-analysis: Chronic disease self-management programs for older adults. *Annals of Internal Medicine*, 143, 427–438.
- Coenen, A. (2003). Building a unified nursing language system: The ICNP. *International Nursing Review*, 50, 65–66.
- Davidhizar, R., & Shearer, R. (2004). Assisting patients to maintain a healthy blood pressure. *Journal of Practical Nursing*, 54(3), 5–8.
- Declaration of Alma-Ata. (1978). *Declaration of Alma-Ata*. International Conference on Primary Health Care, Alma-Ata, Soviet Union.
- DiCenso, A., Guyatt, G., & Ciliska, D. (2005). *Evidence-based nursing: A guide to clinical practice*. Philadelphia: Mosby.
- Dickinson, H. O., Mason, J. M., Nicolson, D. J., Campbell, F., Beyer, F. R., & Cook, J. V. (2006). Lifestyle interventions to reduce raised blood pressure: A systematic review of randomized controlled trials. *Journal of Hypertension*, 24(2), 215–233.
- Doran, D. M. (2003). *Nursing-sensitive outcomes: State of the science*. Boston: Jones and Bartlett.
- Eaton, L. E., Buck, E. A., & Catanzaro, J. E. (1996). The nurse's role in facilitating compliance in clients with hypertension. *Medical Surgical Nursing*, 5, 339–345, 359.
- Ebrahim, S. (1998). Detection, adherence and control of hypertension for the prevention of stroke: A systematic review. *Health Technology Assessment*, 2(11), 1–78.
- Fahey, T., Schroeder, K., & Ebrahim, S. (2006). Interventions used to improve control of blood pressure in patients with hypertension. *Cochrane Database System Review*, 4, CD005182.
- Fernandes, F. B. (1999). Thesis abstract: A study of the compliance to the selected aspects of treatment and the reasons for non-compliance among clients with hypertension. *Asian Journal of Cardiovascular Nursing*, 7(2), 16–17.
- Fouad, M. N., Kiefe, C. I., Bartolucci, A. A., Burst, N. M., Ulene, V., & Harvey, M. R. (1997). A hypertension control program tailored to unskilled and minority workers. *Ethnicity & Disease*, 7, 191–199.

- Freitag, M. H., & Vasan, R. S. (2003). What is normal blood pressure? Current opinion. *Nephrology & Hypertension*, 12, 285–292.
- Graham, L., Sketris, I., Burge, F., & Edwards, L. (2006). The effect of a primary care intervention on management of patients with diabetes and hypertension: A pre-post intervention chart audit. *Healthcare Quarterly*, 9(2), 62–71.
- Grundy, S. M., Balady, G. J., Criqui, M. H., Fletcher, G., Greenland, P., Hiratzka, L. F., et al. (1998). Primary prevention of coronary heart disease: Guidance from Framingham: A statement for healthcare professionals from the AHA task force on risk reduction. *Circulation*, 97, 1876–1887.
- Hamilton, G. A. (2003). Measuring adherence in a hypertension clinical trial. *European Journal of Cardiovascular Nursing*, 2, 219–228.
- Heiberg, L. J. (2000). Body image and weight loss maintenance in elderly African American hypertension. *American Journal of Health Behavior*, 24(3), 163–174.
- Hill, M. N., & Berk, R. A. (1995). Psychological barriers to hypertension therapy adherence: Instrument development and preliminary psychometric evidence. *Cardiovascular Nursing*, 31(6), 37–43.
- Hong, W. H. (2007). *Evidence-based nursing practice for health promotion in adults with hypertension in primary healthcare settings*. Unpublished doctoral dissertation, University of Wisconsin-Milwaukee.
- Hook, M. L., Burke, L. J., & Murphy, J. (2009). An IT innovation for individualizing care: Success with clinicians leading the way. *Studies in Health Technology and Informatics*, 146, 493–497.
- International Classification for Nursing Practice. (2010). *International classification for nursing practice version 2.0.*, Geneva, Switzerland: International Council of Nurses.
- Jamnik, V. K., Gledhill, N., Touyz, R. M., Campbell, N. C., Logan, A. G., & Padwal, R. (2005). Lifestyle modifications to prevent and manage hypertension for exercise physiologists and fitness professionals. *Canadian Journal of Applied Physiology*, 30, 754–761.
- Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. (2003). *The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (NIH Publication No. 03-5233). Washington, DC: U.S. Department of Health and Human Services. Retrieved February 20, 2007, from <http://www.nhlbi.nih.gov/guidelines/hypertension/express.pdf>
- Jonnalagadda, S. S., & Diwan, S. (2005). Health behaviors, chronic disease prevalence and self-rated health of older Asian Indian immigrants. *Journal of Immigrant Health*, 7(2), 75–83.
- Krieger, J., Collier, C., Song, L., & Martin, D. (1999). Linking community-based blood pressure measurement to clinical care: A randomized controlled trial of outreach and tracking by community health workers. *American Journal of Public Health*, 89, 856–861.
- Lancaster, K. (2004). Characteristics influencing daily consumption of fruits and vegetables and low-fat dairy products in older adults with hypertension. *Journal of Nutrition for the Elderly*, 23(4), 21–33.
- Lang, N. M., Hook, M., Akre, M., Kim, T. Y., Berg, K., Lundeen, S. P., et al. (2006). Nursing and informatics for the 21st Century/Chapter 23: *Translating knowledge-based into referential and executable applications in an intelligent clinical information system* (pp. 291–303). Chicago, IL: HIMSS.
- Lang, T. (2000). Factors that appear as obstacles to the control of high blood pressure. *Ethnicity & Disease*, 10, 125–130.
- Lee, M. S., Lim, H. J., & Lee, M. S. (2004). Impact of qigong exercise on self-efficacy and other cognitive perceptual variables in patients with essential hypertension. *Journal of Alternative & Complementary Medicine*, 10(4), 675–680.
- Li, F., Fisher, K. J., & Harmer, P. (2005). Improving physical function and blood pressure in older adults through cobblestone mat walking: A randomized trial. *Journal of the American Geriatrics Society*, 53, 1305–1312.
- Liehr, P., Meiningner, J. C., Vogler, R., Chan, W., Frazier, L., & Smalling, S. (2006). Adding story-centered care to standard lifestyle intervention for people with Stage 1 hypertension. *Applied Nursing Research*, 19, 16–21.
- Malloch, K., & Porter-O'Grady, T. (2006). *Introduction to evidence-based practice in nursing and health care*. Sudbury, MA: Jones and Bartlett.
- Martin, K. S. (2005). *The Omaha System: A key of practice, documentation, and information management*. Philadelphia: Elsevier Saunders.
- Martin, K. S., & Scheet, N. J. (1992). *The Omaha System: Application for community health nursing*. Philadelphia: Saunders.
- McCraty, R., Atkinson, M., & Tomasino, D. (2003). Impact of a workplace stress reduction program on blood

- pressure and emotional health in hypertensive employees. *Journal of Alternative & Complementary Medicine*, 9, 355–369.
- McTigue, K. M., Harris, R., Hemphill, B., Lux, L., Sutton, S., & Bunton, A. J. (2003). Screening and interventions for obesity in adults: Summary of the evidence for the US preventive services task force. *Annals of Internal Medicine*, 139, 933–949.
- Melnyk, B. M., & Fineout-Overholt, E. (2005). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Philadelphia: Lippincott Williams & Wilkins.
- Moher, M., Hey, K., & Lancaster, T. (2005). Workplace interventions for smoking cessation. *Cochrane Database of Systematic Reviews*, 2, CD003440.
- Mulrow, C. D., Chiquette, E., Angel, L., Cornell, J., Summerbell, C., & Anagnostelis, B. (2006). Dieting to reduce body weight for controlling hypertension in adults. *Cochrane Database of Systematic Reviews*, 1, CD000484.
- Mulrow, P. J. (1999). Hypertension a worldwide epidemic. In J. L. Izzo & H. R. Black (Eds.), *Hypertension primer* (pp. 271–273). Baltimore: Lippincott Williams & Wilkins.
- National Heart, Lung and Blood Institute. (2006). Disease and conditions index. Retrieved December 12, 2005, from <http://www.nhlbi.nih.gov/health/dci/index.html>
- Oncken, C. A., White, W. B., Cooney, J. L., Van Kirk, J. R., Ahluwalia, J. S., & Giacco, S. (2001). Impact of smoking cessation on ambulatory blood pressure and heart rate in postmenopausal women. *American Journal of Hypertension*, 14, 942–949.
- O'Rourke, J. E., & Richardson, W. S. (2001). Evidence based management of hypertension—What to do when blood pressure is difficult to control. *British Medical Journal*, 322, 1229–1232.
- Padwal, R., Campbell, N., & Touyz, R. M. (2005). Applying the 2005 Canadian Hypertension Education Program recommendations: Lifestyle modifications to prevent and treat hypertension. *Canadian Medical Association Journal*, 173, 749–751.
- Pescatello, L., Franklin, B. A., Fagard, R., Farquhar, W. B., Kelly, G. A., & Ray, C. A. (2004). American College of Sports Medicine position stand: Exercise and hypertension. *Medicine & Science in Sports & Exercise*, 36, 533–553.
- Pheley, A. M., Terry, P., Pietz, L., Fowles, J., McCoy, C. E., & Smith, H. (1995). Evaluation of a nurse-based hypertension management program: Screening, management, and outcomes. *Journal of Cardiovascular Nursing*, 9(2), 54–61.
- Puddey, I. B., & Beilin, L. J. (2006). Alcohol is bad for blood pressure. *Clinical & Experimental Pharmacology & Physiology*, 33(9), 847–852.
- Rankins, J., Sampson, W., Brown, B., & Jenkins-Salley, T. (2005). Dietary Approaches to Stop Hypertension (DASH) intervention reduces blood pressure among hypertensive African American patients in a neighborhood health care center. *Journal of Nutrition Education & Behavior*, 37, 259–264.
- Raw, M., McNeill, A., & West, R. (1998). Smoking cessation guidelines for health professionals. A guide to effective smoking cessation interventions for the health care system. *Health Education Authority*, 53, 11–19.
- Roberts, C., & Banning, M. (1998). Managing risk factors for hypertension in primary care. *Nursing Standard*, 12(23), 39–43.
- Rogers, M. A., Small, D., Buchan, D. A., Butch, C. A., Stewart, C. M., & Krenzer, B. E. (2001). Home monitoring service improves mean arterial pressure in patients with essential hypertension: A randomized, controlled trial. *Archives of Internal Medicine*, 134, 1024–1032.
- Saounatsou, M., Patsi, O., Fasoi, G., Stylianou, M., Kavga, A., & Economou, O. (2001). The influence of the hypertensive patient's education in compliance with their medication. *Public Health Nursing*, 18, 436–442.
- Schneider, R. H., Alexander, C. N., Staggers, F., Orme-Johnson, D. W., Rainforth, M., & Salerno, J. W. (2005). A randomized controlled trial of stress reduction in African Americans treated for hypertension for over one year. *American Journal of Hypertension*, 18, 88–98.
- Schroeder, K., Fahey, T., & Ebrahim, S. (2006). Interventions for improving adherence to treatment in patients with high blood pressure in ambulatory settings. *The Cochrane Library*, CD004804.
- Schuster-Decker, R., Foster, C., Porcari, J. P., & Maher, M. A. (2002). Acute effects of dynamic exercise and nutritional supplementation on blood pressure in mildly hypertensive patients. *Clinical Exercise Physiology*, 4, 17–21.
- Smith, D., Merritt, S. L., & Patel, M. K. (1997). Church-based education: An outreach program for African Americans with hypertension. *Ethnicity & Health*, 2, 243–253.
- Staessen, J., Fagard, R., & Amery, A. (1988). The relationship between body weight and blood pressure. *Journal of Human Hypertension*, 2, 207–217.
- Stamler, J., Stamler, R., & Neaton, J. D. (1993). Blood pressure, systolic and diastolic, and cardiovascular risks: U.S.

- population data. *Archives of Internal Medicine*, 153, 598–615.
- Stewart, K. J., Bacher, A. C., Turner, K., Fleg, J. L., Hees, P. S., Shapiro, E. P., et al. (2005). Effect of exercise on blood pressure in order persons. *Archives of Internal Medicine*, 165, 756–762.
- Svetkey, L. P., Simons-Morton, D. G., Proschan, M. A., Sacks, F. M., Conlin, P. R., & Harsha, D. (2004). Effect of the dietary approaches to stop hypertension diet and reduced sodium intake on blood pressure control. *The American Journal of Nursing*, 105(9), 13.
- Touyz, R. M., Campbell, N., Logan, A., Gledhill, N., Petrella, R., & Padwal, R. (2004). The 2004 Canadian recommendations for the management of hypertension: Part III. Lifestyle modifications to prevent and control hypertension. *Canadian Journal of Cardiology*, 20, 55–59.
- United States Department of Health and Human Services. (2003). National high blood pressure education program. Facts about the DASH eating plan, *NIH Publication No. 03-5233*. Retrieved September 11, 2006, from <http://www.nhibi.nih.gov>
- Vollmer, W. M., Sacks, F. M., Ard, J., Appel, L. J., Bray, G. A., & Simons-Morton, D. G. (2001). Effects of diet and sodium intake on blood pressure: Subgroup analysis of the DASH-sodium trial. *Annals of Internal Medicine*, 135, 1019–1028, 1016.
- Whelton, S. P., Chin, A., Xin, X., & He, J. (2002). Effect of aerobic exercise on blood pressure: A meta-analysis of randomized, controlled trials. *Annals of Internal Medicine*, 136, 493–503.
- Wilkinson, J. M. (2007). *Nursing process and critical thinking* (Rev. 4th ed.). Upper Saddle River, NJ: Pearson Education.
- Williams, B., Poulter, N. R., Brown, M. J., Davis, M., McInnes, G. T., Potter, J. F., et al. (2004). Guidelines for management of hypertension: Report of the fourth working party of the British Hypertension Society. *Journal of Human Hypertension*, 18, 139–185.
- Wolf-Maier, K., Cooper, R. S., Kramer, H., Banegas, J. R., Giampaoli, S., & Joffres, M. R., (2004). Hypertension treatment and control in five European countries, Canada, and the United States. *Hypertension*, 43, 10–17.
- Wolz, M., Cutler, J., Roccella, E. J., Rohde, F., Thom, T., & Burt, V. (2000). Statement from the National High Blood Pressure Education Program: Prevalence of hypertension. *American Journal of Hypertension*, 13, 103–104.
- Woollard, J., Belilin, L., Lord, T., Puddey, I., MacAdam, D., & Rouse, I. (1995). *Clinical and Experimental Pharmacology & Physiology*, 22, 466–468.
- World Health Organization (WHO)/International Society of Hypertension (ISH). (2003). Statement on management of hypertension. *Journal of Hypertension*, 21, 1983–1992.
- World Health Organization. (2002). *The world health report 2002: Risks to health 2002*. Geneva, Switzerland: Author.
- World Health Organization. (2005). *Updated projects of global mortality and burden of disease, 2002–2030: Data sources, methods, and results. Evidence and Information for Policy World Health Organization*. Retrieved October 15, 2007, from <http://www.who.int/healthinfo/statistics/bodprojections2030/en/index.html>
- Writing Group of the PREMIER Collaborative Research Group. (2003). Effects of comprehensive lifestyle modification on blood pressure control. *The Journal of the American Medical Association*, 289, 2083–2093.
- Yeh, L., Lu, F. H., & Wang, C. J. (2002). A preliminary study on the health promotion outcomes of high-risk hypertensive freshmen. Kaohsiung. *Journal of Medical Sciences*, 18(11), 557–565.
- Yosefy, C., Dicker, D., Viskoper, J. R., Tulchinsky, T. H., Ginsberg, G. M., & Leibovitz, E. (2003). The Ashkelon Hypertension Detection and Control Program (AHDC Program): A community approach to reducing cardiovascular mortality. *Preventive Medicine*, 37, 571–576.
- Yug, B. S., Kochar, M. S., & Kotecki, G. (1996). Smoking and hypertension. *Journal of Practical Nursing*, 46(4), 45–46.
- Yura, H., & Walsh, M. B. (1983). *The nursing process: Assessing, planning, implementing, evaluating*. Norwalk, CT: Appleton-Century-Crofts.